

Q 1. $x^3 + 2x$, $7x^2 - 5x + 3$

(a) (1) will be the larger polynomial as $x \rightarrow \infty$
because (1) is a third degree polynomial
and x^3 will grow much faster than x^2 in (2)

(b) $x^7 - x^5 - x^3 - x$, $x^6 + 2344x^2 - x^4 + 273x^3$

(1) will be larger again because the largest exponent
 x^7 is going to grow faster than x^6 by one
order of x (in eq 2.)

(c) x^4 , $4x^4 + x^3$

(2) will be larger as $x \rightarrow \infty$ because while
(1) is the same degree polynomial, (2) grows at a
rate over $16x$ as fast. $\frac{d}{dx}(x^4) = 4x^3$

$$\frac{d}{dx}(4x^4 + x^3) = 16x^3 + 3x^2 \quad 4x^3 < 16x^3 + 3x^2$$

Q 3. {"Howdy", "Hello", "Hay"}

this is because the change method changes the string
in the zeroth index to "howdy"

Q 2. a. $\log_2(x) = 8$

$$2^8 = x = 256$$

b. $\log_3(x) = \log_3(2) + 25$

$$\log_3(x) - \log_3(2) = 25 \quad \log_3\left(\frac{x}{2}\right) = 25$$

$$x/2 = 2 \quad x = 4$$

c. $x = \log_4(32)$

$$= \log_4(16) + \log_4(2)$$

$$= 2 + 0.5$$

$$= 2.5$$

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